

**UNIVERSITY OF ILLINOIS**

16 May ..... 19 88

**THIS IS TO CERTIFY THAT THE THESIS PREPARED UNDER MY SUPERVISION BY**

**Denise L. Goddard**

**ENTITLED** ..... **Cremation Practices and their Potential in Establishing**

**Rank in Safety Harbor Culture**

**IS APPROVED BY ME AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE**

**DEGREE OF** ..... **Bachelor of Arts**

**Instructor in Charge**

**APPROVED:**

**HEAD OF DEPARTMENT OF** ..... **Anthropology**

**Cremation Practices and Their Potential  
in  
Establishing Rank in Safety Harbor Culture**

**By**

**Denise L. Goddard**

---

**Thesis**

**for the  
Degree of Bachelor of Arts  
in  
Anthropology**

**College of Liberal Arts and Sciences  
University of Illinois  
Urbana, Illinois**

**1988**

## ABSTRACT

The practice of cremation by Southeastern Indians has prompted the question of whether these aboriginal societies used this form of mortuary program as a category of rank that was afforded to only those individuals sufficiently qualified. By using the archaeological material of Tatham and Weeki Wachee Mounds located in North Central Florida, I hope to demonstrate the difficulty and potential of using cremations as an indicator of ranking in Safety Harbor Culture.

## ACKNOWLEDGEMENTS

I would like to thank, first of all, Dale Hutchinson, for his patience in giving me insight and assistance in developing arguments for ranking that could be applied to the material from Tatham and Weeki Wachee Mounds and in pointing out the problems encountered in proposing social ranking within aboriginal groups. I also want to thank Dr. Barry Lewis for insisting that I focus my attention on the prospect through a greater emphasis in mortuary studies and their potential. Finally, I wish to thank Dr. Tom Riley for his constructive criticism and for his insistence on the use of additional data. I greatly appreciate the constructive criticism and support.

## TABLE OF CONTENTS

	Page
Introduction .....	1
Disposal of the Dead at Safety Harbor Sites .....	2
Tatham and Weeki Wachee Mounds .....	4
Effects of Temperature on Bone .....	14
Mortuary Variability in Assessing Rank .....	24
Prospect of Ranking at Tatham and Weeki Wachee Mounds .....	28
Conclusion .....	29

## LIST OF FIGURES

Figure	Page
1. Location of Tatham and Weeki Wachee Mounds .....	5
2. Unit Excavations of Tatham Mound .....	6
3. Burial 54 of Tatham Mound .....	8
4. Burial 97 of Tatham Mound .....	9
5. Burial 1 of Weeki Wachee Mound .....	12

## LIST OF TABLES

Table	Page
1. Burials 54 and 97 of Tatham Mound .....	10
2. Burial 1 of Weeki Wachee Mound .....	13
3. Tabulation of Artifact by Burial Form of Tatham Mound .....	20
4. Tabulation of Provenience by Burial Form of Tatham Mound .....	21

## INTRODUCTION

Through the study of prehistoric burial practices anthropologists have been able to partially reconstruct the social and material attributes of numerous aboriginal North American groups. Archaeological excavations of burial mounds have provided the material necessary for establishing subsistence patterns, ceremonial or ritual behavior, and social structure. Artifact type, quantity, and distribution have been of principle concern in understanding social status among these groups. In addition, the types of burials present and their spatial distribution have been conducive in testing ranking theories. One important variant in the mortuary program of Southeastern Indians was the practice of cremation.

This thesis explores the correlation between cremation practices and social status of Safety Harbor Indians by focusing on three critical areas: the material remains and cremation practices of Safety Harbor Indians (including other aspects of their mortuary program), analysis of cremated remains (both experimental techniques of burning bone and problems associated with age and sex determination of cremated remains), and finally the correlation of status to the mortuary practice of cremation.

Safety Harbor is a Mississippian period culture in west peninsular Florida dating from approximately A.D. 1000 to the seventeenth century (Mitchem and Hutchinson 1987:4). It is traditionally demarcated by Safety Harbor Incised and Pinellas Series pottery types, but Mitchem is currently redefining the archaeological correlates. Pinellas Series ceramics are also closely related to Fort Walton Incised and Lake Jackson Plain of the Fort Walton Period

(Willey 1949:475). Occasionally Pensacola Series sherds occur in Safety Harbor contexts (Willey 1949:475).

Most Safety Harbor sites are located in Manatee County, Florida, but also extend to the north central and central coastal regions (Willey 1949:476). Buzzard's Island is the northernmost Safety Harbor site and is atypical in that Safety Harbor Incised pottery is not found and that burials are located in cemeteries, not in mounds (Willey 1949:476). The southernmost site is Aquí Esta which is also atypical in that radial burials are present (Luer and Almy 1980:301-320).

#### DISPOSAL OF THE DEAD AT SAFETY HARBOR SITES

Mound burial was the predominant form of interring the dead at Safety Harbor sites. Such mounds were built specifically for this purpose, although in certain instances Weeden Island period burial mounds were utilized for a second time by the Safety Harbor Indians (Willey 1949:477). Usually Safety Harbor mounds were similar in form and shape to those of Weeden Island, being primarily circular in construction and conical in form (Willey 1949:477-478). The height ranged from two to ten feet with the diameter measuring between 35 - 80 feet (Willey 1949:478). One mound served as a temple substructure (Parrish Mound 2 in Manatee County) and contained the cremated remains of 39 individuals (Willey 1949:478). There are also two instances where cemeteries were utilized instead of mounds (Willey 1949:478).

Generally, secondary burial was the form of treatment. These were composed of bundle, single skull, and multiple burials (Willey 1949:478). Other mounds contained both secondary and primary burial forms which included extended and flexed types respectively (Willey 1949:478). Some mounds however,

contained the partial or complete cremated remains of individuals, although this form of disposal was rare, and they are few in number. In contrast, Parrish Mound two contained the semicremated remains of 39 individuals that were either placed randomly throughout the mound or were located in a sub-mound pit (Willey 1949:478).

Five of eleven mounds located in Hillsborough County, Florida contained the cremated remains of between two and three individuals each (Thomas, Cagnini, Branch, Jones, and Picnic) while the remaining six mounds reveal an absence of cremations (Bullen 1952:7-79). In north central Florida, Tatham and Weeki Wachee Mounds contained the cremated remains of approximately two individuals each. The skeletal material (cremated material only) from these two mounds provide the physical evidence used in the analysis of cremation processes and their consequences.

Safety Harbor burial practices parallel Weeden Island closely in that both included primary and secondary forms of interment. "Secondary treatment of the dead and the charnel house or bone-cleaning complex continued, and some primary inhumation was also followed" (Willey 1949:478). The placement of pottery vessels near or over the deceased in Safety Harbor mounds seems to suggest that this trend was an extension of Weeden Island (Willey 1949:478). In north central Florida one Safety Harbor aboriginal group used a cemetery burial program. Thus Safety Harbor culture exhibits variation in mortuary programming whether in the type of interment or in the usage of cemeteries and mounds. The practice of cremation, although rare is nonetheless present in a variety of Safety Harbor Mounds in central and north central Florida.

Artifacts associated with Safety Harbor burials consisted of ceramic and nonceramic aboriginal artifacts, and materials of European origin (Willey 1949:478). Most mounds contained other artifacts such as shell beads, lithics, and European glass beads that were placed with individuals. Many mounds contained pottery vessels that were "killed" through intentional perforation (Willey 1949:478). "In some cases they were arranged in special caches or deposits on base; in other instances they were placed with or inverted over individual skeletal remains" (Willey 1949:478).

The combination of artifacts and mortuary treatment suggests that deceased members of Safety Harbor cultures were afforded special treatment at death. Of course, some were given greater attention than others within the same aboriginal group. Both Tatham and Weeki Wachee mounds provide the necessary material for determining whether individuals were considered equal or unequal in social status. Thus it is necessary to describe both sites in order to demonstrate that cremation practices can be used effectively in establishing status in Safety Harbor culture (see Fig. 1).

#### TATHAM AND WEEKI WACHEE MOUNDS

Tatham Mound is a Safety Harbor site that is located in Wild Hog Scrub in eastern Citrus County, Florida (Mithchem and Hutchinson 1987:4). The mound contained the remains of approximately 350 individuals, two of which were cremated (see Fig. 2). Burials consisted of both primary and secondary forms with the cremations being secondary in nature (Burials 54 and 97). A variety of grave goods were associated with numerous burials and included Busycon shell beads, gold and silver beads, European glass beads, copper plates, and various aboriginal ceramics (Mithchem and Hutchinson 1987). One of the cre-

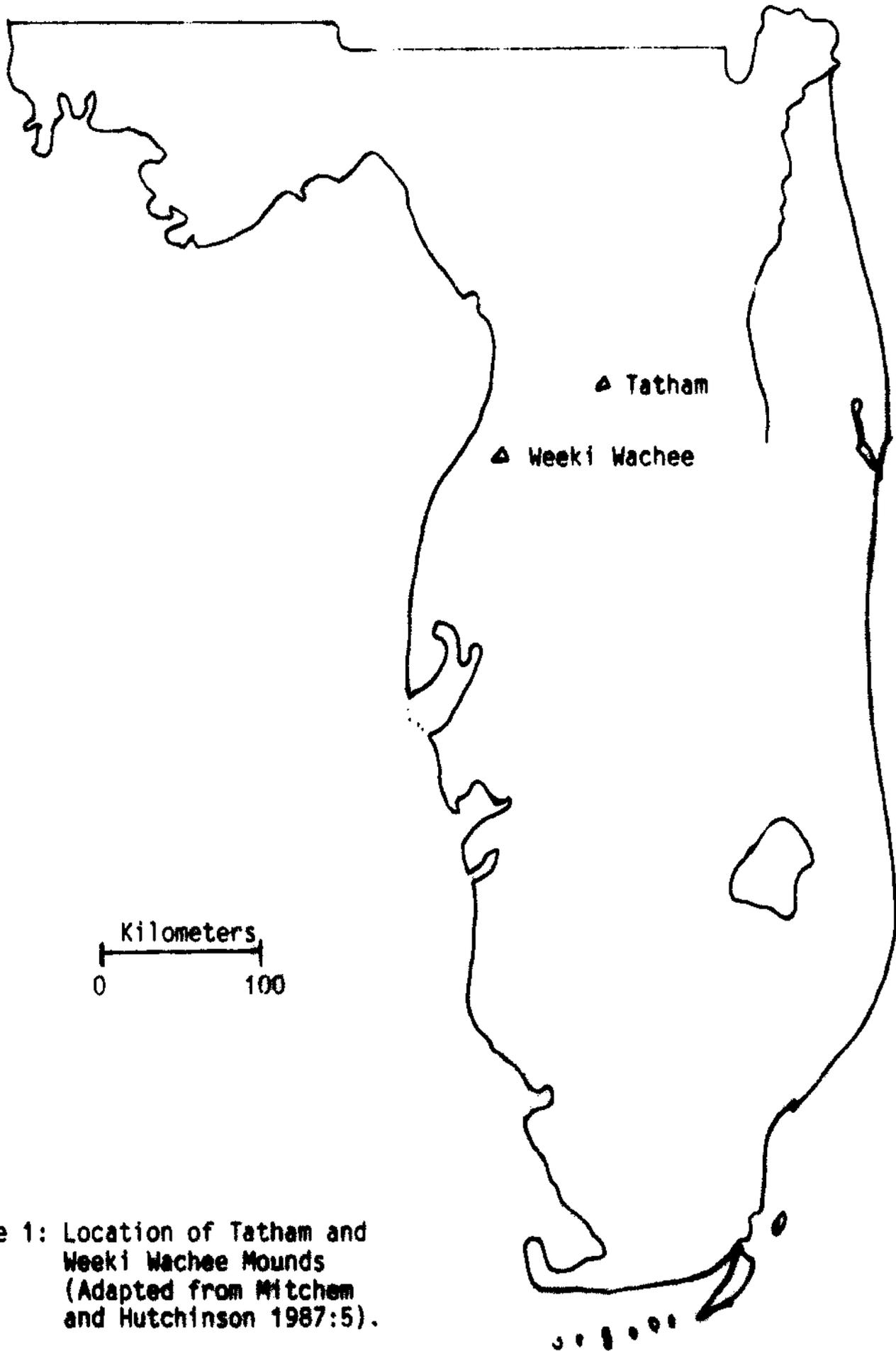


Figure 1: Location of Tatham and Weeki Wachee Mounds (Adapted from Mitchem and Hutchinson 1987:5).

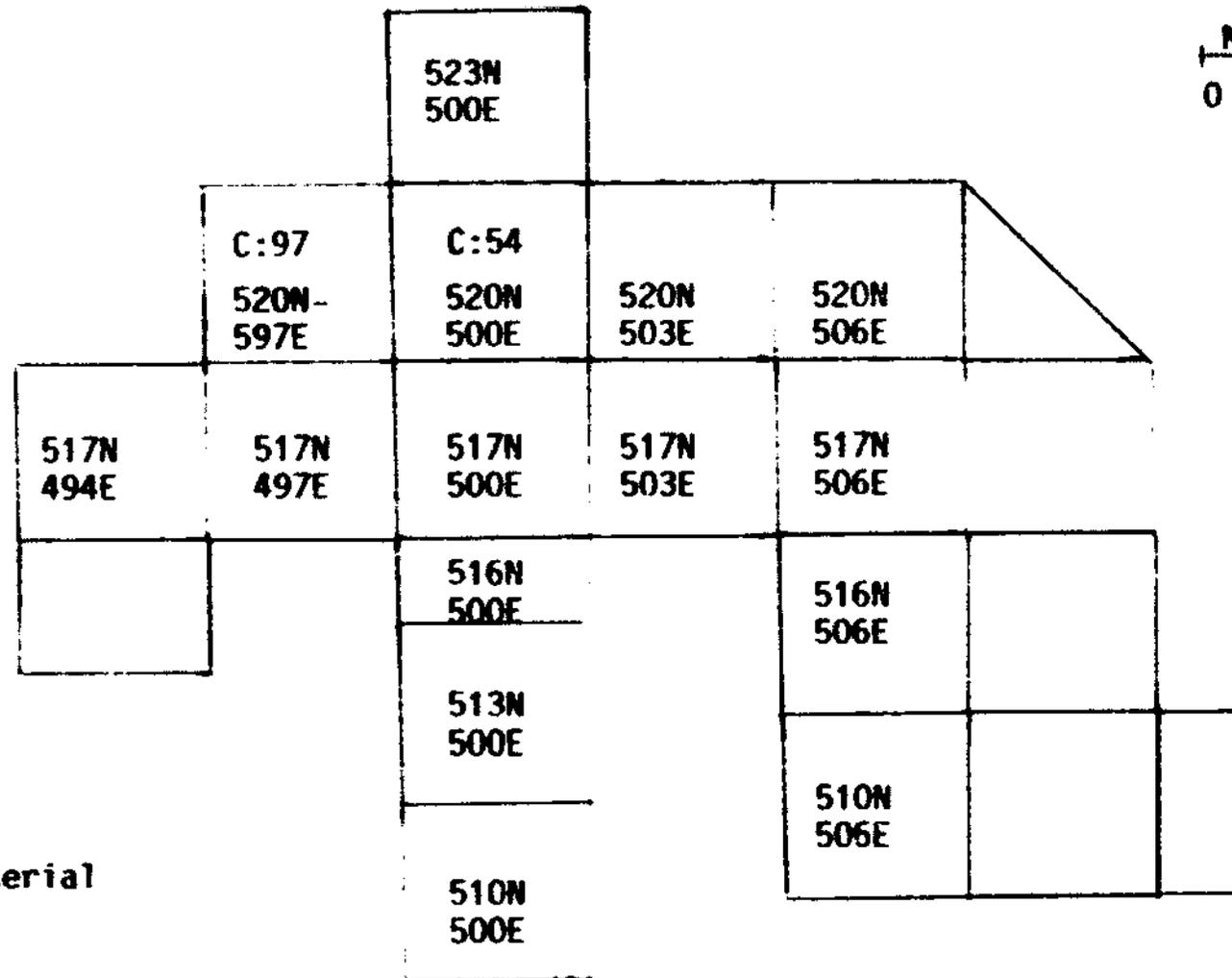
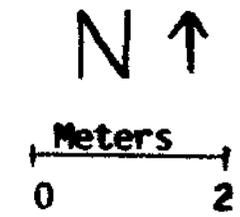


Figure 2. Unit Excavations of Tatham Mound  
(Adapted from Mitchem and Hutchinson 1986:8).

mations (Burial 54) contained three small glass beads, one rolled sheet copper bead, five glass beads, and one shell disc bead (Mitchem and Hutchinson 1987:61). In contrast, Burial 97 did not contain any associated artifactual elements.

Weeki Wachee Mound located in Hernando County, Florida (Figure 1) is composed of 63 burials, many of which contain more than one individual. "Several concentrations of long bones were recovered, suggesting the cleaning out of a charnel structure" (Mitchem et al. 1985:184). Other burial types include flexed primary and two cremations with the remaining burials being secondary (Mitchem et al. 1985:184). "In general, it appears that ceramic vessels, whole shells, or shell dippers were not placed as grave goods with specific burials" (Mitchem et al. 1985:184). Yet, in several instances skulls were overlain by shells or sherds (Mitchem et al. 1985:154-185). In addition, many of the vessels were intentionally broken with the sherds scattered throughout the mound (Mitchem et al. 1985:154-185). Artifacts that were directly associated with individual burials included several types of beads such as glass, silver, shell, and amber (Mitchem et al. 1985:185).

Investigation of Burials 54 and 97 at Tatham mound reveals a possible duality in mortuary processing. Bone material of Burial 54 is heavily calcified and exhibits a high degree of fragmentation (see Figure 3 and Table 1). The material is inundated with curvilinear fractures suggesting that this individual was possibly fleshed at the time of cremation (Ubelaker 1978). In contrast, the bone material comprising Burial 97 is less fragmentary and shows evidence of incomplete combustion which resulted in the diaphysis of the right femur remaining relatively intact (see Table 1 and Figure 4).

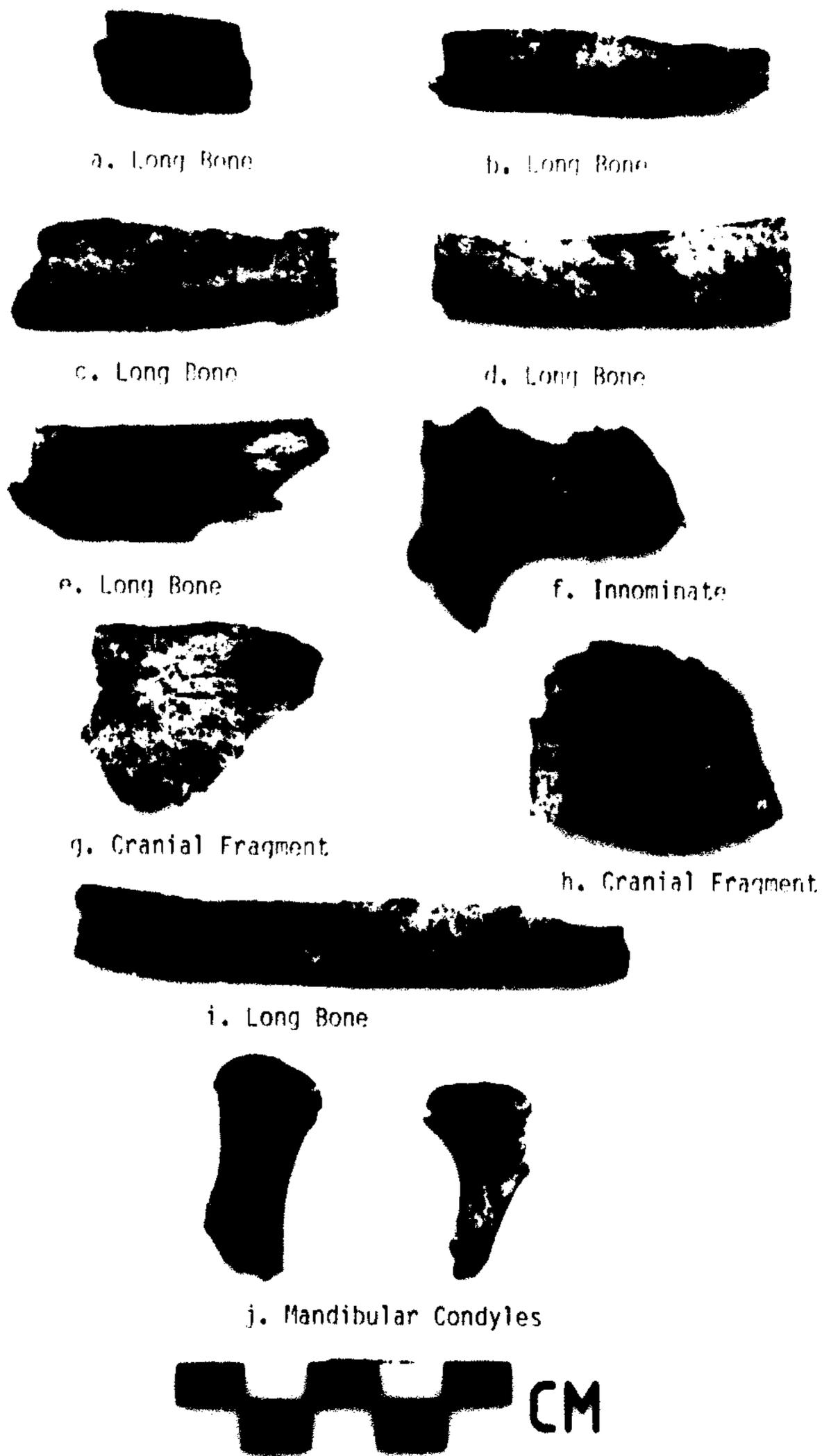


Figure 3. Burial 54 of Tatham Mound

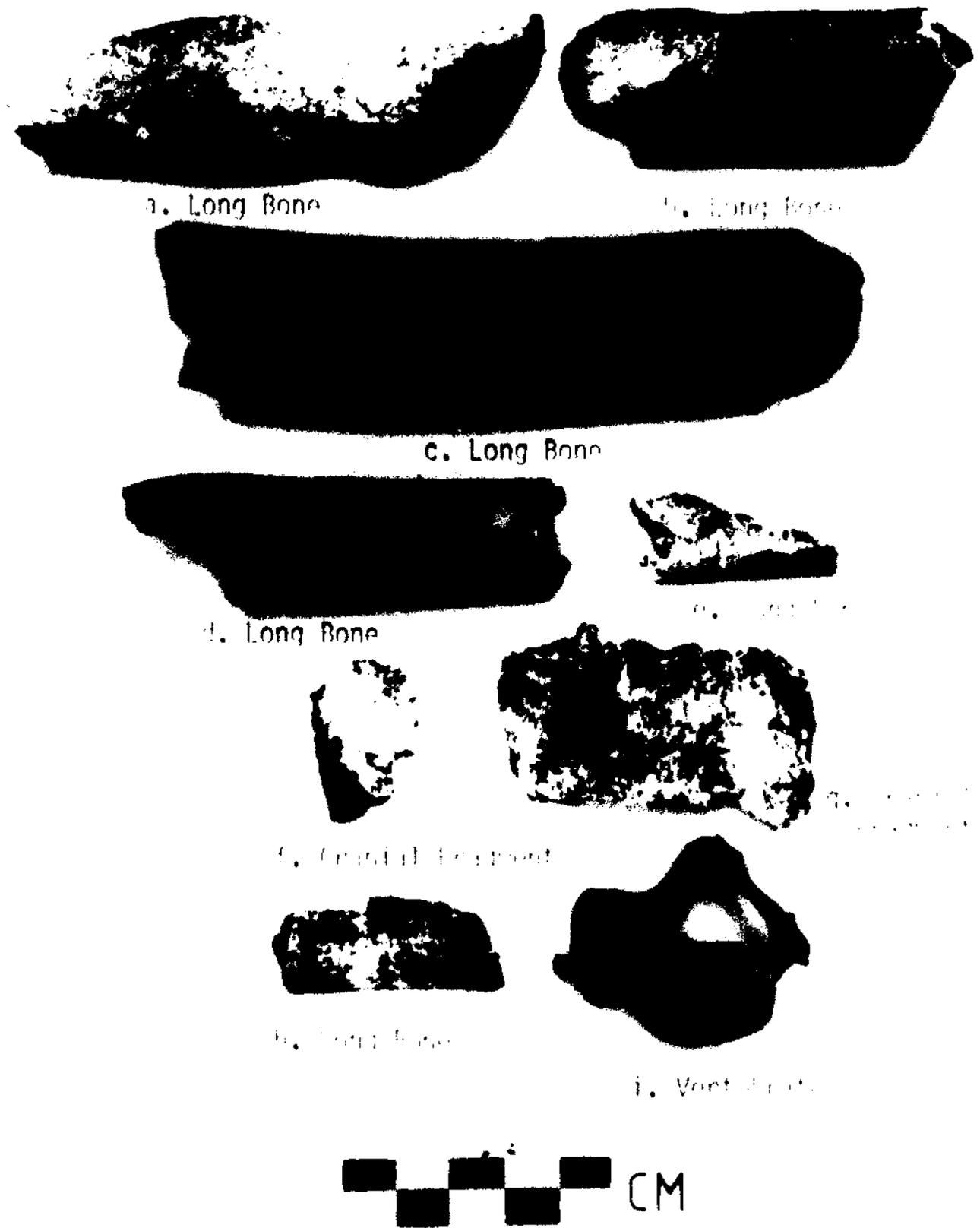


Figure 4. Mammal remains from Site 100.

TABLE 1

<u>Bone Types</u>	<u>Color Code</u>	<u>Temperature °C</u>
<u>Burial 54</u>		
Left Orbit	7.5Y (5/2)	360-440
Parietal-Temporal	7.5Y (9/0)	800-900
Frontal	7.5Y (7/0)	360-440
Maxillary Molar	7.5Y (9/0)	900-940
Occipital	7.5Y (6/0)	360-440
Mandibular Condyles	7.5Y (6/0)	360-440
Cervical Vertebrae	2.5Y (5/0)	700-800
Rib (1st.)	7.5Y (9/0)	900-940
Ulna	10.0Y (8/2)	745-800
Innominate	10.0Y (5/2)	745-800
Femur (proximal head)	7.5Y (9/0)	525-600

Burial 97

Right Parietal	7.5Y (6/0)	900-940
Lumbar Vertebrae	10.0Y (2/2)	440-500
Cervical Vertebrae	7.5Y (2/0)	20-185
Ribs	10.0Y (3/3)	525-600
Right and Left Scapula	7.5Y (6/4)	360-440
Humerus	7.5Y (7/0)	870-940
Innominate	7.5Y (8/0)	675-800
Tibia	7.5Y (6/0)	900-940
Mandible	7.5Y (6/0)	900-940

NOTE: All temperatures were correlated with the Shipman et al. 1984 experimental data.

The fracture patterns were longitudinal with heavy checking occurring in the bones of the cranial vault. The right scapula showed little evidence of burning. Hence, this individual was probably placed on his right side and then burned which implies that the individual was fleshed prior to cremation (Hutchinson, personal communication 1988). This individual has been determined to be an adult female (Hutchinson, personal communication 1987), with no associated artifacts. In addition, a tree stump had disturbed the burial and no accurate determination of the location of the cremation was secured.

Burial 1 at Weeki Wachee Mound contained the cremated remains of one individual. Fracture patterns were curvilinear with some degree of checking also present in long bones (see Figure 5 and Table 2). There is also evidence of differential burning in that some long bones were totally unburned. In addition, there are infant teeth within this burial which are probably intrusive since no other material (bone) of this infant is represented. It appears that the infant's teeth were not burned lending credence to the intrusive aspect of this burial. Burial 55 contains cremated material but is so fragmentary that no determination of age or sex could be made as is the case with Burial 1. No long bones were present in Burial 55 and cranial material showed differential burning (e.g. the inner vault is not burnt). However, the outer portion of the cranial vault is quite calcified. No artifactual material was associated with either of these individuals.

The presence of cremated individuals at Tatham and Weeki Wachee mounds does not prove that ranking was present. What is necessary to establishing



a. Long Bone



b. Long bone



c. Long Bone



d. Long Bone



e. Innominate



f. Parietal



g. Long Bone



h. Parietal



i. Occipital



Figure 5. Burial 1 of Weeki Wachee Mound

TABLE 2

<u>Bone Types</u>	<u>Color Codes</u>	<u>Temperatures °C</u>
<u>Burial 1</u>		
Frontal	7.5Y (7/0) & 5.0Y (8/1)	870-900
Parietal	7.5Y (7/0) & 5.0Y (8/1)	870-900
Innominate	5.0Y (8/1)	800-900
Long Bones	5.0Y (8/1)	800-900
Right Orbit	5.0Y (8/1)	800-900
Occipital	7.5Y (7/0)	870-900

All temperatures were correlated with the Shipman et al. 1984 experimental data.

NOTE:

Due to the exceptional fragmentation of Burial 55 at Weeki Wachae Mound, no rigorous analysis was conducted outside of noting the pattern of burning.

the proposition of ranking is the demonstration that cremations do in fact involve differentiation in the mortuary program of Safety Harbor Indians. What is required is a more scientific treatment of the data (i.e. cremated remains). For this reason it is necessary to present the analysis and results obtained by researchers who conducted cremation experiments in an attempt to correlate temperature with discoloration and shrinkage of cremated bone material.

#### EFFECTS OF TEMPERATURE ON BONE

Investigation into the process of cremation has led researchers such as Shipman et al. (1984) to conduct experiments using bone material from sheep and goats which could then be applied to human skeletal remains. A temperature range of 20 - 940° C was used to determine the type of discoloration, crystal structure, shrinkage, and micro-morphological changes incurred. Five stages of varying temperatures were utilized. Stage one had a temperature range of 20 - 185° C, stage two 186 - 285° C, stage three 286 - 440° C, stage four 441 - 800° C, and stage five 801 - 940° C respectively (Shipman et al. 1984:312-313). Distinctive patterns of burning were accurately interpreted by using a Munsell Soil Color Chart which eliminates to some degree the possibility of subjective judgment influencing the results.

Stage one burning did not affect the actual texture of the bone material, but did produce an undulating of the surface. Subchondral bone was pierced by vascular canals at fairly regular intervals. Yet the surface remained intact and continuous (Shipman et al. 1984:314).

Stage two produced a more granular surface due to the separation of small pores and fissures. The surface is still intact and continuous (Shipman et al. 1984:314).

Stage three resulted in the bone surface becoming glassy and smooth as the granules disappeared. Polygonal cracking began and produced plates which are directly affected by the dehydration of vascular canals. Furthermore, cracks between the vascular canals accelerated the formation of these plates which are perpendicular to the surface of the bones and are readily demarcated (Shipman 1981).

Stage four caused the bone material to become frothy and particulated especially during the initial part of this stage (Shipman 1981).

Stage five resulted in the particles melting and forming larger structures with the surface becoming smooth and featureless. These effects are exhibited in the micro-morphology of bone material (Shipman et al. 1984:314).

Burning bone also results in discoloration of the material which is a critical factor in determining the temperatures achieved during the cremation process. Stage one samples are usually white or yellow in appearance. The second stage produces a color range of red-brown to dark-grey brown to red-yellow. Stage three causes coloration to range from black-blue to red. In the fourth stage the bone material is mainly white with grey and light grey areas also represented (Shipman et al. 1984:313). Stage five is a neutral white with grey and red-yellow color also being present (Shipman et al. 1984:313). All colors are compared to the Munsell Soil Color Chart by chrome and hue.

Another important result encountered in burning bone is the shrinkage factor. This usually affects the accurate determination of age and sex in the population under study. The gross anatomical results of burning bone has been proven to be a polynomial equation which expresses the amount of shrinkage as a function of temperature (Shipman et al. 1984:320). Thus all analysis of cremated material must be conducted in a manner that takes shrinkage into consideration. In addition, soil constitution can readily affect the observable color of skeletal remains and must be considered during analysis (especially when using the Munsell Soil Color Chart).

Furthermore, the process of cremation will distort the bone material and therefore may be used in determining the condition of the body prior to burning. More specifically, the presence or absence of flesh covering bone at the time of cremation will effectively cause either incomplete combustion or increased fracturing of the material. The lack of complete combustion, fracturing incurred, and differential coloration of bone are essential factors that enable researchers to reconstruct the cremation event. Likewise, soil constitution, wood types, and the implementation of crematory pits or platforms will determine the extent and duration of the event. Finally, the atmospheric conditions encountered at the time of cremation (humidity and temperature especially) can cause alterations in the material through rapid cooling.

Defleshing of the body prior to cremation can either cause cracking or longitudinal splitting on the surface of bone. Warping or twisting of bone material usually does not occur with dry bone (Ubelaker 1978:35). "Burning of green flesh covered bone creates curved transverse fracture lines, ir-

regular longitudinal splitting, and marked warping" (Ubelaker 1978:35). Figures 3 thru 5 illustrate the types of burning patterns encountered (more specifically Figure 3: a, c, d, e, f, and Figure 4; a-i, both were probably fleshed at the time of cremation). The position of the body during cremation determines the physical appearance of the remains which can be useful in reconstructing the process (position of the heat source). Shielding of specific areas of the body will result in the incomplete combustion of bone material (probably due to cremation in a pit).

Material resources procured for the purpose of conducting cremations also determine the temperatures achieved. The two cremated individuals analyzed from both Tatham and Weeki Wachee mounds showed temperature ranges of 360 - 940° C with a mean temperature of 650° C. Types of wood that produce such temperature ranges are juniper and oak with typical temperatures exceeding 750° C. Stacked wood fires can reach temperatures of 962° C while open campfires usually reach temperatures of 400° C. Some campfire temperatures of 600 - 900° C can be reached if improvised ovens are utilized (Shepard 1956). Since a wide range of temperatures were achieved at both Tatham and Weeki Wachee it is likely that a simple campfire was used within the confines of a cremation pit.

Two important variables are the location of the body during the burning event and the atmospheric conditions present. The location of the body and its proximity to the heat source determines the degree of fragmentation and calcification of the material. Bone will not reach the same temperature as the heat source for a time period under two hours. Thus in order to obtain maximum heat content, close proximity to the flame and sufficient dura-

tion of the process is required for complete combustion to be achieved. One method available to aboriginal groups was the utilization of cremation pits which would allow high temperatures to be achieved and maintained. Calcified bone is usually a neutral white color and is evidence of extensive burning at high temperatures whereas blackened or brown bone reflect incomplete combustion.

Likewise, weather or atmospheric conditions such as humidity and temperature will limit the extent or duration of the cremation fires. Obviously the season during which the cremation is conducted will influence the final outcome. Another factor would be the number of individuals cremated simultaneously which would entail the need for additional resources.

While much attention has been focused on the results of cremating individuals, there is still much more information to be obtained before any convincing arguments of ritual treatment of the body can be established. Many investigators have proposed theories of rank based on the amount of energy expenditure and ritual treatment afforded certain individuals within aboriginal populations. Cremation is an important mortuary practice that has the potential of supporting such propositions but not without some difficulty. Arguments based on the condition of the body prior to cremation may not be fundamentally accurate for the factors affecting the bone material during and after cremation are still not fully understood. Thus in order to validate ranking arguments that use cremation as a key indicator, it is probably more reasonable to look at the entire mortuary program of a population (especially taking note of variability) and to demonstrate in a par-

simonious manner that energy expenditure has occurred without qualifying whether the individual was afforded ritual defleshing (or was allowed to decompose in a charnel structure). In reality arguments of fleshed versus defleshed body conditions prior to cremation are probably beyond proof. Yet this does not limit the potential of cremation practice being used as an indicator of social status. We do know from ethnohistorical accounts that Southeastern Indians treated the body of the deceased with utmost respect since that person's spirit lived after death (Hudson 1976:327).

Burial forms at Tatham mound include primary; extended, semiflexed, flexed, and supine. Secondary burial forms were single individual bundles, multiple individual bundles, and cremations. While there are several different forms of burial at Tatham and Weeki Wachee, no single burial form predominates in a statistically significant manner (see Tables 3 and 4). Nor does a cross tabulation of burial form by artifact and alternately, burial form by provenience. A statistical analysis of both of these tabulations yielded a significance of zero. Yet, by viewing the data in a qualitative manner, one can infer that the diverse forms of burial and their associated artifacts reflect a grading of energy expenditure and grave goods. Thus, Tatham mound can be considered to represent status distinctions among Safety Harbor Indians based on diversity and complexity of their mortuary program and by the inclusion of elaborate grave goods with certain individuals.

Differentials in wealth and energy expenditure can indicate graded status in mortuary processing (Brown 1981:28). Wealth and effort used to distinguish social rank can assume different forms. Complex treatment of the corpse, types of interment structures and their location, the funeral ritual

<u>Artifact:</u>	<u>Beads</u>	<u>Copper</u>	<u>Mixed Artifacts</u>			<u>Red Ochre</u>	<u>Lithics</u>
			<u>Aboriginal</u>	<u>European</u>	<u>Aboriginal-European</u>		
<u>Burial Form</u>							
Extended Supine	0	0	0	0	1	0	0
Flexed on Right Side	0	0	0	0	0	0	0
Legs Flexed over Chest	1	1	3	2	6	0	0
Legs Flexed under Femora	1	0	1	1	4	0	0
Primary Indeterminant	1	0	3	1	1	0	0
Half Sitting	0	0	0	0	0	0	0
Single Individual Bundle	1	0	3	0	0	1	1
Multiple Individual Bundle	1	0	0	0	2	0	0
Cremation	0	0	1	0	1	0	0
Secondary Indeterminant	1	0	0	0	0	0	0

Table 3: Artifact by Burial Form of Tatham Mound

<u>Burial Form</u>	<u>Provenience</u> N: E:	<u>513</u> <u>500</u>	<u>513</u> <u>503</u>	<u>516</u> <u>497</u>	<u>516</u> <u>500</u>	<u>516</u> <u>503</u>	<u>517</u> <u>497</u>	<u>517</u> <u>500</u>	<u>517</u> <u>503</u>	<u>517</u> <u>506</u>	<u>520</u> <u>497</u>	<u>520</u> <u>500</u>	<u>520</u> <u>503</u>	<u>523</u> <u>500</u>
Extended Supine		1	0	0	0	0	0	1	0	0	0	1	0	0
Flexed on Right Side		2	1	0	0	0	0	0	0	0	0	0	2	0
Legs Flexed over Chest		0	0	1	3	5	7	2	6	0	8	5	0	1
Tibia Flexed under Femora		0	0	0	0	1	0	4	3	0	2	2	0	0
Primary Indeterminant		0	0	3	2	2	3	6	2	1	1	0	0	2
Half Sitting		0	0	0	1	0	1	0	0	0	0	0	0	0
Single Individual Bundle		2	0	0	4	2	1	4	4	0	0	4	0	1
Multiple Individual Bundle		0	0	0	1	0	1	2	2	0	8	6	0	0
Cremation		0	0	0	0	0	0	0	0	0	1	1	0	0
Secondary Indeterminant		0	0	0	0	1	0	1	3	0	0	2	1	1

Table 4: Provenience by Burial Form of Tatham mound

involved, material distribution and type represented, and the question of human sacrifice, are all elements indicative of ranked societies (Brown 1981:29). Artifacts usually reflect status or social stratification, yet it is not always easy to ascertain which artifacts accurately signify this stratification. Several varieties of beads are present at Tatham and Weeki Wachee along with celts, but their symbolic importance has not been clarified.

Perhaps a more reliable method of establishing the presence of ranking within an aboriginal group is the use of burial types and the expenditure of energy required in preparing the deceased. A test for ranking must be based on the mortuary ceremonialism defined by the archaeological evidence available and should include two independent dimensions of social personae delineated in the burials (Peebles and Kus 1977:431).

"The first, superordinate dimension, must be a spatial ordering which is based on symbols, energy expenditure, and other variables of mortuary ritual, and which is not simultaneously ordered on the basis of age and sex. That is, membership in the class are based on the ascriptive qualities of an individual's genealogy. In the superordinate dimension some infants, some children, and some adults will be found in every scale category except the paramount category. This apical class will contain only adults, and probably only adult males. That is, in the superordinate dimension some infants and children will be ranked equally with some adults and higher than other adults in a lower scale position. Some infants and children will have greater amounts of energy expended on their mortuary ritual than some adults: in the same manner some women will be ranked higher than some men and will share status-specific symbols with some men" (Peebles and Kus 1977:431).

This test is dependent on the "...clear evidence of nonvolitional, ascribed ranking of persons" within the aboriginal group (Peebles and Kus 1977:431).

"The second, subordinate dimension will be a partial ordering based on symbols, energy expenditure and other variables, which generally will be ordered on the basis of age and sex. That is, beyond the "given" features of age and sex, variability in this dimension will reflect achievement through life histories of individuals. The older the individual, the greater the opportunity for accomplishment, therefore, on the average, the higher the rank. In the subordinate dimension, as the chronological age of the burial increases so will the energy expenditure on that individual's burial: adult burials will be more complex and evince greater energy expenditure than those of infants. Children and infants will have some items as grave goods that will not be shared by adults: women will have some items as grave goods that will not be shared by men. In general, the symbols of rank and office (Binford's sociotechnic artifacts), of the superordinate dimension will not be found in the subordinate dimension. Lastly, the numbers of burials in each scale category in the superordinate dimension should decrease markedly as one goes higher on the scale, thereby reflecting the ranking pyramid. The number of individuals in each scale category of the subordinate dimension should reflect the age and sex pyramid of the population through time" (Peebles and Kus 1977:431).

Other correlates of ranking (and eventually chiefdoms) include settlement types and sizes, subsistence patterns, and management of resources (Peebles and Kus 1977:431-443). Peebles and Kus have determined through cluster analysis of the population interred at Moundville that these individuals were ranked. By dividing the population into three segments (labelled; A, B, and C) they were able to establish rank by spatial isolation and artifact association. To illustrate, Segment A represented the superordinate dimension with children and infant burials containing an array of artifacts. Burials of adults (males?) also contained many diverse artifacts which include copper ear spools, stone discs, minerals (red and white paints), bear tooth pendants, oblong copper gorgets, shell beads, pearl beads, and galena cubes (Peebles and Kus 1977:439). Segments B and C contained those individuals that comprised the subordinate dimension. Adult male burials

contained ceremonial celts and effigy vessels are associated with adults of both sexes. Females, infants, and children are also present with associated artifacts ranging from water shells (with infants) to shell gorgets and effigy vessels (Peebles and Kus 1977:429).

Quantity of grave goods is only one dimension in the burial program of Southeastern Indians. Other dimensions include differential treatment of the individual prior to burial and energy expenditure in disposal of the body. Individuals of high rank elicit greater treatment both in ritual preparation of the body and in the eventual disposal. Thus, there is a direct correlation between status and the amount of energy afforded certain individuals during the burial process as well as in the type and quantity of grave goods.

#### MORTUARY VARIABILITY IN ASSESSING RANK

Three categories chosen by Binford (1971) to assess ranking within a given population included the following: (1) "differential treatment of the body itself, (2) differential preparation of the facility in which the body was placed for disposal, and (3) differential contributions to the burial furniture placed with the body" (Binford 1971:21).

Differential treatment of the body includes washing of the body and graveside exhibition of the deceased. This may also include ritual treatment of the individual where the deceased is either displayed next to his grave or carried in a procession before burial. Additional distinction may include mummification, mutilation, and cremation. In this instance energy expenditure is required to perform these types of treatment. Two other distinctions are disposal of the dead in staves and temporary disposal in

platforms or scaffolds (Binford 1971:21). In all of the preceding examples, some form of energy expenditure was required in the pre-interment of the deceased and suggests that individuals afforded such treatment would be those of high rank while those of lesser rank would either not exhibit these forms of treatment or would only receive a limited amount.

The second category pertains to the facilities, burial position, and location of interment. Facilities include sub-surface graves and charnel structures which were reserved for individuals of different status, and were constructed from a variety of materials procured for the express purpose of signifying the differential status of those interred. Another method of indicating rank would have been the burial position of the individual interred, particularly in reference to one of the cardinal directions or solstice angles. Presumably, priests or chiefs would be given this form of burial since they would elicit the greatest amount of respect and would be more intimately linked to esoteric knowledge. Finally, the spatial location of burials would depend on status in that individuals of higher rank would be buried in close proximity to one another while lesser status individuals may be buried elsewhere (Binford 1971:21).

Likewise, the type and quantity of grave goods associated with certain individuals would reflect graded status. As mentioned previously, grave goods are considered to be a significant indicator in differential status since they reflect the material distinctions among members of the interred population, and thus provide critical information (Binford 1971:21).

The social status or position of an individual at the time of death will be exhibited in the type and extent of mortuary treatment (Binford 1971:

22). Increasing complexity and greater variability in treatment are indicative of high status individuals who will elicit different forms of distinction (Binford 1971:22). Persons of very high status may be interred in an entirely different location, afforded elaborate preparation of the body or ceremonial attention, and be accompanied by either a substantial amount of grave goods or by status specific artifacts (Binford 1971:22-23). In contrast, low status individuals "...may be differentiated by membership group affiliation and sex only, with no specific treatment related to status" (Binford 1971:23). "In some cases, status may take precedence over sodality affiliation in mortuary symbolism, in direct proportion to the degree that the roles performed by the deceased were specifically related to the activities of the community at large, as opposed to being sub-group specific" (Binford 1971:23).

In the Southeast a general trend may have been developing from 2000 to 1500 B.P. and continued through the Mississippian period, whereby ranking became an important socio-political event. "The parallel widespread emergence, to varying degree, of new positions of sociopolitical control (reflected in the differential treatment of some individuals within mortuary programs) represents another aspect of the increasing but regionally variable development of institutionalized mechanisms of social intergration and cooperation above the household level as lineage- and village-level organizational ties were strengthened" (Smith 1986:45). The intensity of the social organization should be reflected in the complexity and diversity of the mortuary program and should also provide a marker for cultural evolution (Smith 1986:45).

"While the lower end of the spectrum of complexity in Southeastern mortuary programs during this time period is marked by those scattered areas where treatment of the dead continued to be relatively attenuated and egalitarian, with household level individual interments or small burial groups occurring within habitation areas, a far more prevalent mortuary pattern representing intergration of relatively small multifamily house-hold social units is reflected in small burial mounds containing fewer than two dozen primary and secondary burials showing little evidence of status differentiation in terms of either grave goods or mortuary treatment" (Smith 1986:45-46).

In egalitarian systems there may be a diversity of mortuary programs superimposed on certain individuals of the population such as the following:

" (1) different preinterment processing, (2) physical partitioning within the burial context, and (3) elaboration of the quantity, rarity or variety of grave goods" (Smith 1986:46).

"Both preferential preinterment processing and partitioning within a burial context are sometimes difficult to assess (particularly in the absence of variability in grave goods). The primary flexed, in situ cremation, and redeposited cremation burials within Mound A at the Bynum site, for example, probably reflect different steps in a single mortuary program rather than different preinterment processing options, while the placement of cremations variously in submound pits, adjacent to crematories on clay platforms or sandstone slab areas, as well as in the mound fill of Mound H at the Pharr site probably represents status-related partitioning within the burial context" (Smith 1981:47-48).

In larger corporate groups the rise of chiefdoms may be reflected archaeologically by burial positions of individuals within the mound, especially those in close proximity to an individual(s) with elaborate burial goods (Smith 1986:48). Thus, differential status probably increased over time within aboriginal groups and were marked by increasing diversity and complexity in the mortuary program utilized.

PROSPECT OF RANKING AT TATHAM AND WEEKI WACHEE MOUNDS

Mortuary variability at both Tatham and Weeki Wachee mounds include different forms of burials and diversity of artifacts accompanying specific individuals. Primary (flexed, semi-flexed, supine, and extended) and secondary burials are well represented in both populations. Cremations comprise the final category of burial forms which are also secondary in nature. The majority of burials at both Tatham and Weeki Wachee mounds are secondary, suggesting that a charnel structure may have been utilized before individuals were interred. Whether this structure was located within the mound is at present unknown. The artifactual materials are currently being analyzed by Mitchem to fully delineate the types represented. However, several different types of aboriginal and European artifacts are present at Tatham and are distributed with certain individuals throughout the mound. While no particular significance in artifact type by burial form is encountered, the variety does reflect a diversity in grave goods. Likewise, when burial forms and provenience are tabulated, they also show no major significance, but do represent a complex and diverse mortuary program. The problem is that most categories do not contain enough cells, and therefore do not allow for an adequate statistical analysis. Despite this problem, enough data does exist for a qualitative analysis which does suggest that both Tatham and Weeki Wachee mounds do represent ranked societies based on energy expenditure and grave goods. Of course, the category that represents the highest degree of energy expenditure is cremation (especially the secondary nature of both cremations).

Mortuary ritual afforded an individual will be dependent on the social rank of the deceased and the number of duty status relationships (relationships with individuals on a purely sociopolitical level) between other members of the society and the deceased (Binford 1971:21). "In turn, the social scale of the deceased should vary directly with the relative rank or the social position held by the deceased" (Binford 1971:21). Thus older persons of higher rank can be expected to elicit a greater amount of mortuary ritual that is proportional to the amount of duty status relations with a greater number of people (Binford 1971:21).

Cremations signify one aspect of mortuary ritual in which energy expenditure is required to conduct the process. The possibility of the deceased being afforded differential treatment before the cremation event is highly likely, yet establishing or verifying this is beyond the ability of most current researchers. If this could be resolved, cremations would then be the most reliable source in attempting to distinguish individuals of high rank from those of lesser rank in cultures that practice cremations. This would add another important category to treatment of the individual which would facilitate the establishment of another level or rank. Thus arguments based on energy expenditure and the special mortuary treatment of specific individuals are important variables that can be effectively utilized in both quantitative and qualitative analysis of aboriginal groups to establish and delineate status positions or higher rank.

#### CONCLUSION

While the process of cremation offers the researcher evidence of differential treatment of the deceased, a greater emphasis needs to be placed on

obtaining a maximum amount of information in two critical areas, the physical and cultural implications of this practice. Evaluation of the physical evidence must include a better understanding of the Physics and Chemistry involved in the process in an effort to delineate the cultural dimension of mortuary variability. Without this knowledge, questions of fleshed versus defleshed body conditions prior to cremation will remain unresolved. Arguments that focus on ceremonial preparation of the deceased's body prior to cremation are not founded on solid evidence (except for instances where soft tissue has adhered to cremated bone). Furthermore, researchers should use their respective data as a means by which to test the ethnohistorical records. In this respect a thorough understanding of Chemistry and Physics can subsequently improve the quality of bone analysis. If a greater level of knowledge can be attained through the use of physical data available from the cremation process then perhaps the fundamental question of differential treatment can be used in an effort to establish the presence of ranking.

All data has its limitations and cremations are no exception, but the potential for using this form of aboriginal mortuary programming in delineating mortuary ritual has not been exhausted. Of course, this entails the development of experimental techniques that will replicate the process conducted by aboriginal groups. In this case, the research design would necessarily be complicated and not without its problems. Clearly, the usage of laboratory kilns in place of cremation pits has not truly replicated the process since conditions are well controlled, which was not possible for aboriginals.

Moreover, the evidence of numerous artifacts and differential mortuary treatment suggests that Safety Harbor culture was indeed ranked and contained individuals of sufficient status or rank to be afforded the process of cremation. The randomness of cremation practice throughout Safety Harbor sites needs to be addressed though at this time it remains unresolved. Only with additional sites and better control over archaeological methods can the question of ranking be ultimately delineated.

## REFERENCES CITED

- Binford, Lewis R.  
1971 Mortuary practices: Their Study and Their Potential. *Memoirs of the Society for American Archaeology* 25:6-29).
- Blakely, Robert L. (ed.)  
1977 *Biocultural Adaptation in Prehistoric America*. The University of Georgia Press, Athens.
- Brown, James A.  
1981 The Search for Rank in Prehistoric Burial. In *The Archaeology of Death*, New York.
- Bullen, Ripley P.  
1952 Eleven Archaeological Sites in Hillsborough County, Florida. Report of Investigations No. 8. Florida Geological Survey, Tallahassee.
- Hudson, Charles  
1976 *The Southeastern Indians*. University of Tennessee Press, Knoxville.
- Krogman, Wilton Marion, and Y. Iscan  
1986 *The Human Skeleton in Forensic Medicine*. Second edition. C.C. Thomas, Springfield.
- Luer, George M. and Marion M. Almy  
1980 The Laurel Mound (8So98) and Radial Burials with Comments on Safety Harbor Period. In *Florida Anthropologist* 40:301-320.
- Mitchem, J., A. Goodyear, M. Smith, and R. Allen  
1985 Indians, Colonists, and Slaves: Essays in Memory of Charles H. Fairbanks. In *Florida Journal of Anthropology* 4:179-212.
- Mitchem, J. and D. Hutchinson  
1986 Interim Report on Excavations at the Tatham Mound, Citrus County, Florida: Season 2. Report Series 28. Florida State Museum, Gainesville.
- Mitchem, J. and D. Hutchinson  
1987 Interim Report on Archaeological Research at the Tatham Mound, Citrus County, Florida: Season 3. Report Series 30. Florida State Museum, Gainesville.
- Peebles, Christopher S., and Susan Kus  
1977 Some Archaeological correlates of ranked societies. *American Antiquity* 42(3):421-448.

Shepard, A.O.

1956 Ceramics for the Archaeologist. Carnegie Institution of Washington, Washington, D.C.

Shipman, P.

1981 Applications of scanning electron microscopy to taphonomic problems. In Annals of the New York Academy of Science 276:357-385).

Shipman, P., G. Foster, and M. Schoeninger

1984 Burnt Bone and Teeth: An Experimental Study of Color, Morphology, Crystal Structure and Shrinkage. In Journal of Archaeological Science 11:307-325.

Smith, Bruce D.

1986 The Archaeology of the Southeastern United States: From Dalton to de Soto, 10,500 - 500 B.P. In Advances in World Archaeology 5:43-62.

Swanton, John R.

1946 The Indians of the Southeastern United States. United States Government Printing Office, Washington.

Tylecote, R.F.

1962 Metallurgy in Archaeology. Arnold Press, London.

Ubelaker, Douglas H.

1978 Human Skeletal Remains. Smithsonian Institution, Washington.

Willey, Gordon R.

1949 Archaeology of the Florida Gulf Coast. Smithsonian Institution, Washington.

Wright, H. and P.W. Bailey

1982 Fire Ecology: United States and Southern Canada. John Wiley and Sons, New York.